

this ground of rejection, the Examiner has essentially taken the position that Merlin et al. teaches all of the limitations of the claims other than the use of a two-dimensional barcode pattern for storing the information; and that it would be obvious to use a two-dimensional bar code in the system of Merlin to arrive at the invention defined in the claims. This position by the Examiner is respectfully traversed. That is, it is submitted that the Merlin et al. reference, in addition to not utilizing a two-dimensional barcode, does not contain any of the limitations of the independent claims 1, 4, 7, 11, 14 and 16, and that, in fact, the present invention and the Merlin et al. reference are only similar in that both deal with providing information regarding a semiconductor device on or adjacent a semiconductor chip or device.

Independent claims 1 and 11 according to the present invention are directed to a two-dimensional bar code pattern provided as chip ID information on the surface on each semiconductor chip. The placing of the barcode pattern directly on the individual chips facilitates the information management at the level of the individual chips using the chip ID information provided on the chip, even when, for example, many chips are arrayed on a wafer.

Moreover, according to independent claims 4 and 14, the two-dimensional barcode pattern is provided on each lead frame used to produce the semiconductor chips, with the information being frame ID information. This placement of the two-dimensional barcode pattern facilitates information management at the level of individual frames during the processing of same, even when there are a plurality of chips arrayed on the individual frames since information regarding the semiconductor chips can easily be recorded as frame ID information. As a result, the processing on

the individual semiconductor chips arrayed on each frame can be carried out with ease and a high degree of reliability.

According to the invention as defined in independent claims 7 and 16, the two-dimensional bar code pattern is provided as product ID information on the surface of the resin sealing a semiconductor chip. This makes it easy to record information and the like with regard to the semiconductor chip as product ID information, even after the semiconductor chip is sealed with resin. As a result, even when chips having slightly different specifications are assigned similar management numbers under the same product number to simplify product management, the product ID information makes it possible to easily identify the information corresponding to a specific semiconductor chip which is sealed within the resin. No where in the Merlin et al. reference is there any teaching of placing any identification at the specific locations recited in the independent claims.

The Merlin et al. reference discloses an arrangement wherein a semiconductor chip (16) is mounted on one surface of a support (15), e.g. a circuit board, and metal contacts (12) are provided on the opposite surface of the support (15). According to the invention of the Merlin et al. reference, ID marks (20) are provided on one or more of the contacts (12) as shown in Figure 2. This is done by etching of the contacts (12) as shown for example in Figure 5. Accordingly, even if the markings (20) of Merlin et al. are considered to be the ID information recited in the respective claims, the markings (20) are clearly not on the surface of the chip (16) as required by independent claims 1 and 11. Thus, these markings cannot be used to achieve information management for the individual electronic chips before the electronic chips (16) are mounted on the

support (15). Thus the advantage achieved according to the present invention of realizing easy information management at the level of the individual chips during the processing thereof is not present. Accordingly, for this reason alone, i.e. the placement of the information on the surface of the individual chips, claims 1 and 11 are allowable over the Merlin et al. reference.

It should further be noted that independent claim 11 requires more than simply putting a double barcode on the surface of the chip. Note that claim 11 additionally recites a read device for reading the chip ID information, and a management unit that registers the read chip ID information and manages individual semiconductor manufacturing processes based upon the registered chip ID information. No such teaching or suggestion is found in Merlin et al. In this regard, it should be pointed out that the information or markings (20) on the contacts (12) of Merlin et al. do not, as taught by the patent, include chip information inherent to each chip, nor, according to the teachings of this reference, do the markings contain any information which could be used to control processing during the manufacturing process as required by claim 11. According to the Merlin et al. reference, the markings may be, for example, a trademark, an indication of the location or identification of the manufacturer, or an identification to prevent falsification of the device. However, there is no indication in this reference that information specific to the chip are provided. Accordingly, for these additional reasons, it is submitted that claims 1 and 11 are allowable over the Merlin et al. patent.

Independent claims 4 and 11 specifically recite that the two-dimensional bar code pattern is provided on a lead frame used to manufacture the device and to which semiconductor chips are bonded, with the information being frame ID information.

Clearly, there is no teaching, suggestion or anything which would make these limitations obvious since the Merlin et al. patent is not concerned with the manufacturer of the chips, but rather with placing markings on a circuit board or card. Moreover, claim 14 contains the limitation similar to claim 11 for utilizing frame ID information provided on the lead frame as a two-dimensional barcode pattern. Accordingly, it is submitted that for the above reasons, independent claims 4 and 14 are allowable over the Merlin et al. reference.

Finally, independent claims 7 and 16 each require that the semiconductor device include at least one semiconductor chip sealed by resin, with the two-dimensional barcode pattern being provided on an outer surface of the resin and containing product ID information. There is no teaching or suggestion that the chips should be sealed in resin and accordingly cannot teach this feature. Moreover, independent claim 16 is similar to claims 11 and 14 with regard to the arrangement for using the information in the double barcode pattern to manage production process, e.g., a product shipping process, based on the product ID information read from the device. Again, not only is the ID information provided according to the Merlin et al. reference entirely different than that taught according to the present invention, but moreover is not useable for this purpose. Accordingly, for these reasons, it is submitted that independent claims 7 and 16 are allowable over the Merlin et al. reference.


Claims 2, 3 dependent on claim 1, claims 5, 6 dependent on claim 4, claims 8, 10 dependent on claim 7, claims 12 and 13 dependent on claim 11, claim 15 dependent on claim 14, claim 17-20 dependent on claim 16, are all considered to be allowable over the Merlin et al. reference for at least the same reasons as the claims from which they

depend. Additionally, these claims more specifically define the specific type of information in the double barcode pattern, which information is not in any way related to the information taught by the Merlin et al., which Merlin et al. information cannot be used for the purposes defined in the claims. Accordingly, for these additional reasons, it is submitted that the dependent claims are allowable over the Merlin et al. reference.

In view of the above amendments, and for the above stated reasons, it is submitted that all of the pending claims, i.e., claims 1-20, are allowable over the prior art of record and are in condition for allowance. Such action and the passing of this case to issue therefore are respectfully requested.

If the Examiner is of the opinion that the prosecution of this application could be advanced by a personal interview, the Examiner is invited to telephone undersigned counsel to arrange for such an interview.

Respectfully submitted,



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